

# PATENT SPECIFICATION

(11) 1425 839

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- (21) Application No. 38961/73 (22) Filed 17 Aug. 1973  
 (23) Complete Specification filed 7 Aug. 1973  
 (44) Complete Specification published 18 Feb. 1976 1976  
 (51) INT CL<sup>2</sup> A23G 1/00  
 (52) Index at acceptance A2B 15  
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## (54) METHOD OF MANUFACTURING A MILK CHOCOLATE

(71) We, CADBURY LIMITED, a British Company of Bournville, Birmingham, 30, declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method of manufacturing a milk chocolate.

Milk chocolate is at present prepared from either:—

a) milk solids in the form of liquid milk, milk concentrates or reconstituted milk powders using the so called "crumb" process followed by a normal chocolate making procedure of refining and conching.

b) milk powder using a dry mix of ingredients followed by a normal chocolate making procedure.

These two methods of preparing milk chocolate result in chocolates having different flavour characteristics and an object of the present invention is to provide a method of manufacturing milk chocolate from ordinary milk powder which will result in a chocolate having the flavour characteristics of a chocolate manufactured by the so-called milk chocolate "crumb" process.

The flavour associated with the so-called crumb process is produced during the condensing and drying stages of the liquid milk/sugar/cocoa mass mixture and is due to the Maillard reaction occurring between the hydroxyl groups of the constituent sugars and the amino groups of the proteins present.

According to the present invention, there is provided a method of manufacturing a milk chocolate, comprising the steps of melting sugar by heating it to a temperature of between 370°F and 410°F, mixing the heated molten sugar with milk powder, and processing the mixture with other chocolate making ingredients to form a milk chocolate.

If skim milk powder is employed in the process, it is necessary to include a further step of heating the mixture of sugar and skim milk powder with milk fat (e.g. anhydrous butter fat) to a temperature of between 240°F and 350°F before the pro-

cessing with other chocolate making ingredients.

If full cream milk powder only is used, the heating step with the sugar alone is sufficient to develop the required flavour.

The heated sugar may be mixed with milk powder in the presence of a minor amount of a reducing sugar, for example glucose, and/or in the presence of cocoa mass.

The invention will further be described in the following examples:—

### EXAMPLE 1

100 lbs of sugar was melted by heating it to a temperature of between 380°F and 400°F and then immediately poured into 46 lbs of skim milk powder held in a heated melangeur to be mixed therein with heating for 10 minutes.

27 lbs of the mixture as prepared above was then added to 16 lbs of anhydrous butter fat in a heated kettle equipped with close-fitting scrapers and stirring paddles. With continuous heating, scraping and stirring, the temperature of the mix was raised to 252°F and held at that temperature for 3 minutes. 5 lbs of the melted sugar/skim milk powder mixture was then added and the temperature of the mixture in the kettle was reduced to 140°F.

113 lbs of the melted sugar/skim milk powder mixture was fed into a melangeur together with 24 lbs of cocoa mass, 36½ lbs of cocoa butter and 49 lbs of the butter fat phase mixture prepared above. When thoroughly mixed, the resultant mixture is ground to a smooth consistency on a set of refining rolls.

280 lbs of the refined powder was then put in a conche, together with 4.8 lbs of lecithin, 5.9 lbs of cocoa butter and 0.6 lbs of flavouring. The mixture was then conched for 24 hours at a temperature not exceeding 110°F to produce a milk chocolate.

### EXAMPLE 2

100 lbs of sugar was melted and heated as in Example 1 and then immediately poured into 23 lbs of skim milk powder and 31 lbs

of full cream milk powder held in a heated melangeur to be mixed therein with heating for 10 minutes.

27 lbs of the melted sugar/milk powder mixture as prepared above was then added to 8 lbs of anhydrous butter fat in a vessel and heated as in Example 1. A further 6 lbs of the melted sugar/milk powder mixture as prepared above was then added and the temperature of the mixture reduced to 140°F.

A further 119 lbs of the melted sugar/milk powder mixture was fed into a melangeur together with 24 lbs cocoa mass, 35 lbs of cocoa butter and 41 lbs of the butter fat phase mixture prepared above. When thoroughly mixed the resultant mixture was ground to a smooth consistency on a set of refining rolls. This material was then conched for 24 hours at a temperature not exceeding 130°F to produce a milk chocolate.

#### EXAMPLE 3

100 lbs of sugar was melted and heated as in Example 1 and then poured immediately into 62 lbs of full cream milk powder held in a heated melangeur to be mixed therein with heating for 10 minutes.

160 lbs of the melted sugar/full cream milk powder mixture was fed into a melangeur together with 24 lbs of cocoa mass and 36 lbs of cocoa butter. When thoroughly mixed the resultant mixture was ground to a smooth consistency on a set of refining rolls and then conched for 24 hours at a temperature not exceeding 130°F to produce a milk chocolate.

#### EXAMPLE 4

Example 1 was repeated except that 95 lbs of sugar was first melted by heating to a temperature of 380°F to 400°F and then immediately poured into a mixture consisting of 46 lbs skim milk powder and 6 lbs of glucose syrup in the heated melangeur and mixed for 10 minutes.

#### EXAMPLE 5

Example 3 was repeated except that 95 lbs of sugar was first melted by heating to a temperature of 380°F to 400°F and then immediately poured into a mixture consisting of 62 lbs of full cream milk powder and 6 lb of glucose syrup in the heated melangeur and mixed for 10 minutes.

#### EXAMPLE 6

Examples 1 to 4 were repeated except that the cocoa mass employed was partly or wholly replaced by an equivalent amount of cocoa powder and cocoa butter.

#### WHAT WE CLAIM IS:—

1. A method of manufacturing a milk chocolate, comprising the steps of melting sugar by heating it to a temperature of between 370°F and 410°F, mixing the heated, molten sugar with milk powder, and processing the mixture with other chocolate making ingredients to form a milk chocolate.

2. A method as claimed in claim 1, wherein the milk powder is skim milk powder and the mixture of sugar and skim milk powder is heated with milk fat to a temperature of between 240°F and 350°F before the processing with other chocolate making ingredients.

3. A method as claimed in claim 1 or 2, wherein the heated sugar is mixed with powder in the presence of a minor amount of a reducing sugar.

4. A method as claimed in any preceding claim, wherein the heated sugar is mixed with milk powder in the presence of cocoa mass.

5. A method of manufacturing a milk chocolate substantially as hereinbefore described in any one of Examples 1 to 6.

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